HIGH-RESOLUTION ABSORPTION CROSS SECTIONS OF ETHANE AT LOW TEMPERATURES

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High-resolution infrared absorption spectra have been created for the ν_9 band of ethane (C_2H_6) at 823 cm^{-1}using the Fourier transform spectrometer at the Australian Synchrotron . Infrared spectra were recorded at four different pressures for four temperatures (200, 160, 120 and 90 K) relevant to typical conditions on Titan. The THz/Far-IR beamline at the Australian Synchrotron is unique in combining a high-resolution Fourier transform spectrometer with an 'enclosive flow cooled' (EFC) cell designed to study gas phase molecules at low temperatures. The low vapor pressure of ethane at 90 K means that the EFC cell is necessary to obtain high-resolution spectra. Our cross sections and line parameters are needed to improve retrievals of ethane on Titan.